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Operational and Mission Highlights

A MONTHLY SUMMARY OF TOP ACHIEVEMENTS

February 2021

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NUCLEAR SECURITY

Advancing Mission-Critical Work—C_3Lab Expands Capabilities

The ramp-up in pit manufacturing activities at the Laboratory in recent years has made clear the need to reconstitute an onsite material testing and certification capability, a need filled by the Chemical Certification & Compatibility Lab (C_3Lab). Located within the Chemical Diagnostics and Engineering group (C-CDE) and supported primarily by the Plutonium Sustainment Program, the C3Lab provides process materials certification and compatibility testing for production activities.

The C_3Lab has an array of chemical analytical capabilities. Additions in the last year include a Spark-OES (optimal emission spectroscopy) for metal pedigree, Near-IR for broad-range vibrational spectroscopy, and polarization modulation-infrared reflection-adsorption spectroscopy (PM-IRRAS) for surface chemistry studies. These and other additions have enabled C_3Lab work to expand quickly. C_3Lab strives to be a Laboratory-wide resource to those in need of materials certification or compatibility testing. Direct all questions to C3Lab@lanl.gov.

CRA Report on Annular Core Reactor Facility Delivered to Sandia National Laboratories

On February 10, 2021, Sandia National Laboratories (SNL) received the final report of the Contractor Readiness Assessment (CRA) for SNL's Annual Core Reactor Facility. The CRA team was assembled by Jason Petti of SNL, with technical support and advice provided by Kerry Smith and Margie Martinez, both from the Laboratory's Readiness, Packaging, and Transportation Division in the Associate Laboratory Directorate for Facilities and Operations. SNL also invited Jim Angelo to serve as a senior technical advisor on the team.

As with most reviews, CRA identified issues that SNL must correct, though the CRA team did not identify any formal findings. Although SNL must now proceed to the Federal Readiness Assessments, congratulations are in order to the SNL team for successfully completing the CRA.

Plutonium Operations Continue Work Toward Milestones

At the Laboratory's Plutonium Facility in January 2021, the year started strong with significant accomplishments in pit-production-related operations:

- In metal production, an electrorefining ring was broken out and provided to the Foundry for use, keeping their operations moving forward.
- In the Foundry, heat-treat operations were conducted as scheduled, with pucks produced to support subcritical programs.
- In waste operations, 100 percent of planned containers and waste metals were removed as scheduled — 18 SAVYs (special material containers), 16 metals and 4 drums
- Plutonium machining also made progress on various disassembly, drilling, pressing, and rough machining processes while assembly teams continued inspection and cleaning operations on pit builds 21 and 22.
- Three engineering evaluation observations were successfully performed, covering leak test braze, cleaning, and density.

These successes, achieved during mid-January 2021, will enable the initiation of pit build 22 operations in following weeks (as planned). Such work positions the Laboratory to begin the third build of the year before inventory.

SCIENCE, TECHNOLOGY, AND ENGINEERING

B-11 Student Wins First Place in AAAS E-Poster Competition

Graduate student Jessica Lalonde (Bioenergy and Biome Sciences, B-11) won First Place in the Technology, Engineering, and Math category of the annual student poster competition for the 2021 American Association for the Advancement of Science (AAAS). Lalonde's e-poster, titled "A Machine Learning Approach to Investigate Degradation of Poly(hydroxyalkanoates)," describes her work as part of the BioManufacturing with Intelligent Adaptive Control (BioManIAC) Laboratory-Directed Research and Development project for which she is collaborating with mentors Babs Marrone (B-11) and Ghanshyam Pilania (Materials Science in Radiation & Dynamics Extremes).

For this project, Lalonde used machine learning to accelerate biopolymer design and development. As described in her e-poster, Lalonde created a unique machine-learning approach to predict degradation performance of polymers with given chemistries and environmental conditions. Analysis of these polymers will lead to a better understanding of how to degrade plastic pollution and to ultimately develop plastics for optimum degradation.

Established in 1848, AAAS is the world's largest multidisciplinary scientific society and a leading publisher of cutting-edge research through its Science family of journals; AAAS has individual members in more than 91 countries around the globe.

'Digital Head' Helps Diagnose Traumatic Brain Injuries

In a recent article published in the Albuquerque Journal, Nitin Daphalapurkar of Fluid Dynamics and Solid Mechanics (T-3) described how a new "digital head" might help doctors spot a brain injury and thus give them an idea of appropriate treatments to help patients recover.

A new computer-modeled software tool, digital head, is being developed to simulate the brain and how it reacts to trauma. The model includes several unique factors that reveal what is happening to the brain at the cellular level. It can also pinpoint where injury has occurred. Knowing this can help alert medical professionals and identify the root cause of cognitive impairments a person may suffer, particularly for an unconscious victim.

Although computer models of the brain are not new, this model considers a patient's specific brain anatomy — a factor important in accurately determining the location of brain injury. Previous models have treated the brain as one solid object rather than a complex organ made up of many different parts, and those models are restricted to the anatomy of an average adult.

In addition, the model may also help improve helmet design and energy-absorbing materials for personal protective equipment. Knowing how a helmet design performs before it is ever produced can save time, money, and lives.

Donald Dry Receives an NNSA Meritorious Service Award

Donald Dry of the Nuclear and Radiochemistry group (C-NR) recently received a Meritorious Service Award from the NNSA Deputy Under Secretary for Counterterrorism and Counterproliferation. Dry earned the award for his exemplary service in supporting NA-40/80, particularly his many contributions to national security in more than 25 years working in the nuclear security enterprise.

The award citation acknowledges that Dry's "formidable technical knowledge and tireless dedication have greatly advanced the nation's nuclear forensic mission tools and techniques." Dry has been the DOE Forensics Operations (DFO) Skill Set Manager and deployable team member in the NNSA Office of Nuclear Forensics. He was instrumental in developing NNSA's component of the Ground Collection Task Force and in strengthening the nation's ability to conduct ground collections and analysis of nuclear debris. The citation also acknowledges Dry's leadership skills and longstanding commitment to the training and readiness of DFO responders. In January 2021, Dry received the award citation from Jay Tilden, NNSA Deputy Under Secretary for Counterterrorism and Counterproliferation.

EES Prescribed and Wildfire Research and International Workshop

The Laboratory's Computational Earth Science (EES-16) group has published a 3D computational study in the *International Journal of Wildland Fire*. This study links observable forest characteristics with fire behavior and reveals how forest structure propagates fire. The study — for the first time — links generalized forest characteristics that can be easily observed by remote sensing and modeled by machine learning to provide insight into fire behavior, even in large forested areas. The study used the EES-developed software known as FIRETEC.

"We knew fuel arrangement affected fire but we didn't know how," said Adam Atchley, lead author on the EES-led study. "Traditional models that represent simplified fuel structures can't account for complex wind and varied fire response to actual forest conditions. Our study incorporated a varied, 3D forest and wind behavior. Adding diverse tree sizes and shapes slowed fire quite a bit, as did adding small gaps between trees.

By examining the physics of fire-fuel behavior, we are able to see fundamentally how forest structure affects behavior."

Additionally, EES hosted the LANL Prescribed Fire Workshop on January 12–14. Turnout for the online workshop included 90 participants from four countries representing dozens of institutions.

Lack of Symmetry in Qubits Cannot Fix Errors in Quantum Computing but Could Explain Matter/ Antimatter Imbalance

A team of quantum theorists that includes Nikolai Sinitsyn, Bin Yan, and Wojciech Zurek, all of Physics of Condensed Matter and Complex Systems (T-4), sought to resolve a basic problem with quantum annealing computers.

To operate properly, these computers must typically run at a relatively slow pace. By operating them faster than normal, the team unexpectedly discovered a new effect that may account for the imbalanced distribution of matter and antimatter in the universe and help establish a novel approach to separating isotopes.

According to Sinitsyn, although the team's discovery did not resolve the annealing time restriction, it brought a class of new physics problems that can now be studied with quantum annealers without requiring them to run too slow.

The team's paper is titled "Nonadiabatic Phase Transition with Broken Chiral Symmetry," which was co-authored by a quantum theorist from Wayne State University. The paper appeared in Physical Review Letters on February 19, 2021.

Machine Learning Blazes Path to Reliable Near-Term Quantum Computers

In a paper published in Physical Review X Quantum on February 16, 2021, Lukasz Cincio and Patrick Coles, both quantum physicists with the Laboratory's Physics of Condensed Matter and Complex Systems (T-4) group, along with coauthors from Sandia National Laboratories, used machine learning to develop algorithms that compensate for crippling noise endemic on today's quantum computers. This compensation offers a way to maximize quantum-computing power for reliably performing actual tasks. The paper is titled "Machine learning of noise-resilient quantum circuits."

According to Coles, the method detailed in this paper is called noise-aware circuit learning (NACL), which will play an important role in attaining a quantum advantage when a quantum computer solves a problem impossible to solve on a classical computer. NACL brings a few advantages compared to other methods of compiling circuits for qubits. For instance, NACL can automatically derive known noise-suppression concepts and apply them where they are useful. The method also incorporates common-sense strategies, such as minimizing the number of noisy idle gates and maximizing the use of ideal gates.

Mission to Mars: Los Alamos National Laboratory Plays Multiple Roles on Perseverance Rover

When NASA's Mars Perseverance rover touched down on the surface of Mars on February 18, 2021, a bit of the Laboratory landed along with it. The goals of the Perseverance mission are to seek evidence of past life on Mars, as well as to collect rock and soil samples that will return to Earth on a future mission. To do this, the rover is equipped with seven scientific instruments, two of which the Laboratory played a part in developing.

The first instrument is SuperCam, which sits on the rover's mast and is equipped with a laser that can zap rocks up to 25 feet away, thus enabling Perseverance to study rock samples unreachable with its robotic arm.

The second Laboratory instrument is SHERLOC, which sits on the arm of the rover and will use ultraviolet laser-induced fluorescence to search for organic molecules that might be signs of life. SHERLOC's detector and electronics were built at the Laboratory.

The Laboratory also played a key role in developing the rover's power source. To have dependable power to explore the frigid Martian surface, the Perseverance rover is equipped with a type of power system called a multi-mission radioisotope thermoelectric generator (MMRTG).

The evening of the landing, the Bradbury Science Museum hosted a virtual "after-party," which was attended by nearly 400 members of the public. This free, hour-long online event featured presentations by more than a dozen Laboratory scientists and engineers who helped develop SuperCam and SHERLOC. The MMRTG was also highlighted.

Successful Virtual Event Explores COVID-19

On February 24, 2021, Laboratory researchers brought a virtual audience to the front lines of the battle against COVID-19 with their Frontiers in Science event, entitled "Coexisting with COVID-19 and the role of science." The moderated conversation featured computational evolutionary biologist Will Fischer (T-6, Theoretical Biology and Biophysics), applied mathematician Nick Hengartner (T-6), and biological physicist Judy Mourant (Bioenergy and Biome Sciences), and included questions from more than 400 online attendees.

The scientists discussed what they have learned about COVID-19 down to the genomic level, and what the scientific outlook is for the future of humanity's relationship with the virus post-inoculation. The researchers also explored how they forecast the number of new infections and use such information to help inform policymakers. A recording of the event will be made available next week.

Team Advances Understanding of Einsteinium, Element 99

Laboratory scientists have published in the journal *Nature* a paper entitled "Structural and Spectroscopic Characterization of an Einsteinium Complex." This paper details the first time researchers have measured the einsteinium bond distance, a basic property of how element 99 interacts with other atoms and molecules.

Co-led by Laboratory scientist Stosh Kozimor (Inorganic, Isotope, and Actinide Chemistry) and Berkeley Laboratory scientist Rebecca Abergel, this team also included members from UC Berkeley and Georgetown University. The team's research helped to establish fundamental concepts associated with the isotope, thus opening up new horizons of further research. The advanced technique used in this study demonstrates the capability to take measurements of highly radioactive elements.

Laboratory researchers designed a sample holder ideally suited to take on challenges intrinsic to acquiring einsteinium data. Berkeley Laboratory and the LANL team collaborated on the XANES and EXAFS data analysis. The Molecular Foundry at Berkeley Laboratory enabled luminescence measurements. The Stanford Synchrotron Radiation Lightsource at the SLAC National Accelerator Laboratory was used for X-ray absorption spectroscopy experiments.

Reference: "Structural and spectroscopic characterization of an einsteinium complex," *Nature*, Vol 590, February 4, 2021.

Using the Web-Based Tool RED Alert to Improve the Detection of Disease Re-Emergence

In a new publication in *JMIR Publications*, scientists from the Laboratory's Bioscience Division provide an assessment of their health analytics tool, known as Re-emerging infectious Disease (RED) Alert. RED Alert uses historical data to help decision makers understand the possibility for disease re-emergence at the local (country) level, assess what contributing factors may be involved, and determine if there is a possibility for global re-emergence of an infectious disease.

In this study, Laboratory scientists used existing data taken from the World Health Organization and other institutions, combined with RED Alert's supervised machine-learning model and visual analytics, to detect potential re-emergence for the following four diseases: measles, cholera, dengue, and yellow fever. Their results suggest that using an analytic like RED Alert could lead to useful, actionable information. Moreover, RED Alert provides early warning of disease re-emergence both locally and globally.

Reference: Parikh N, Daughton AR, Rosenberger WE, Aberle DJ, Chitanvis ME, Altherr FM, Velappan N, Fairchild G, Deshpande A. Improving Detection of Disease Re-emergence Using a Web-Based Tool (RED Alert): Design and Case Analysis Study. *JMIR Public Health Surveillance* 2021; 7(1).

MISSION OPERATIONS

248 Laboratory Employees Receive DOE Secretary's Honor and Achievement Awards

The DOE Secretary recently recognized 248 employees with Honor and Achievement Awards. These awards represent the highest honor a DOE employee or contactor can receive from DOE.

"Congratulations to the recipients, many of whom innovated and persevered through a tough time in our global history," said Thom Mason, Laboratory Director. "These awards reinforce the fact that our national lab-

oratories' most important asset is a skilled, dedicated workforce."

Laboratory staff members participated in eight teams recognized for numerous efforts, such as the following:

- transitioning the Laboratory workforce to telework,
- providing COVID-19 testing with the capacity to process more than 1,000 tests per day in the DOE national laboratory complex,
- mobilizing the nation's supercomputing capabilities to meet the challenges of the COVID-19 pandemic,
- recruiting new employees,
- safeguarding nuclear fuels,
- monitoring nuclear explosions,
- conducting radiological source response and recovery, and
- efficiently providing supplies across the Nuclear Security Enterprise.

The DOE Secretary's Honor Awards formally recognize the outstanding achievements of individuals and teams who have gone above and beyond in fulfilling DOE's mission. Thirty-two Honor Awards were granted across the DOE Complex this year, with 24 teams receiving the Secretary of Energy Achievement Award.

Acquisition Services Management Launched the First Phase of New Procurement Software

Acquisition Services Management (ASM) recently launched the pilot of the first phase of its new e-commerce procurement software — Ariba. This initial phase will produce immediate benefits to the Lab, including procurement process efficiencies and standardization.

During this pilot phase, the first three Ariba modules are enabled, including supplier lifecycle and performance, sourcing, and contract modules. This initial launch will set the foundation for full Ariba rollout (the second phase), which is currently targeted for May 2021.

The transition period between February and May will include registering suppliers in Ariba and migrating existing supplier contracts from Oracle to Ariba. Until then, training and resources will be made available to stakeholders and users to help them become familiar with the new system.

Laboratory Director Covers New Leases, the W93, Vaccines, and More in a Virtual Town Hall

In a February 2021 Town Hall, Laboratory Director Thom Mason shared news about the new presidential administration, the NNSA Performance Assessment for FY20, and new initiatives in ST&E and Community Relations. Mason also introduced several members of Weapons Program leadership to discuss the need for the W93, a potential new warhead for the United States Navy. The Laboratory is aiming to design, produce ,and field this system to provide flexibility to the nation's deterrent.

The Laboratory's success in FY21 hinges on our ability to execute the growing mission. Mason explained that the budget is the highest in the Laboratory's history and hiring continues at a robust pace.

"Throughout the course of the year, we are going to focus on safely transitioning to a post-COVID environment," Mason said. "The risk is going to diminish over time, which will help us in getting the mission done."

Laboratory Group Implements Web-Conferencing System Suitable for UCNI Discussions

The Laboratory's Network and Infrastructure Engineering group for Telecommunication Services (NIE-TS) has implemented a version of Webex (a well-known web-conferencing system) known as FedRAMP (Federal Risk and Authorization Management Program). A more secure version of the Webex platform, FedRAMP enables discussions associated with Unclassified Controlled Nuclear Information (UCNI).

A major development in infrastructure, FedRAMP enables UCNI-related programs, particularly those in mission-essential areas, to continue conducting business remotely while social-distancing standards remain in place during the COVID-19 pandemic.

Laboratory Releases Interactive Lab Agenda for 2021

In addition to launching a new, modern logo and brand, this year the Laboratory produced a strategic, interactive version of the 2021 Laboratory Agenda. This document is key to LANL's operation; it acts as a blueprint for meeting goals and the overarching mission.

The dynamic digital version is designed to work seamlessly on mobile devices. It also provides a simple navigation tool and interactive elements to add interest.

Overall, the richer visual experience of this digital agenda encourages employees to think broadly about the Laboratory's strategic initiatives and helps them find information about their specific goals.

Onboarding Successes Support Future Operations

The New Employee Training (NET) Academy in the Weapons Production directorate began little more than one year ago. At that time, employees involved in this academy had no idea about the challenges onboarding and training that 2020 would bring. Although plans took an unexpected turn because of COVID-19 pandemic-related precautions, NET still found great success in its first year.

In January 2020, the program started with about 30 employees in its first cohort. Today, the program has grown, with 126 glovebox fissionable-material-handler operators-in-training actively participating in five different cohorts, or groups, that started over the past year.

The program is closing in on its goal to reduce average qualification time by 50%, only set back because of the COVID-19 pandemic. So far, the academy has produced 29 qualified glovebox operators and eight certified fissile material handlers. Combined with other efforts to reduce Q clearance processing time and Human Reliability Program certification time, NET Academy is improving the training process, setting up both new and current employees for successful long-term excellence in operations.

Paving Work at the Laboratory Went into High Gear this Past Fiscal Year

Laboratory crews from Facilities and Operations took advantage of reduced Laboratory traffic to resurface streets, with road improvements in an around the Lab going into high gear this past fiscal year. The extensive paving work at the main Vehicle Access Port (VAP) is just one of many projects completed by the UI Division and Logistics' Roads & Grounds crew.

Other high-traffic roads that were repaved include West Jemez Road near the Emergency Operations Center (EOC). Crews paved about 10 lane miles this past fiscal year. Other projects included the following:

- West Jemez near the EOC from Anchor Ranch Road to NM4.
- The inbound and outbound lanes at the main VAP, continuing through the intersection at Diamond Drive.
- West Jemez from its intersection with Diamond Drive to Casa Grande Drive.
- The area surrounding the Strategic Computing Complex.
- An access road at the TA-03 substation.
- The access road to the Sanitary Waste Water System facility.

Plutonium Facility Upgrades Quickly Lead to Increased Efficiency

After 22 pressure differential transmitters (PDTs) were replaced in the Plutonium Facility (PF-4) as of early January 2021, significant time savings have already been observed. In a recent annual calibration of equipment, outage time in PF-4 was reduced by about 65 percent, with the calibration accomplished in less than one weekend (previous outage times lasted one week or more).

The resultant timesaving benefits are thanks to the new components, which are more efficient and easier to manage. Electro-mechanical mechanisms, PDTs are subject to age- and wear-and-tear-related degradation. The new components eliminate potential struggles with adjusting and calibration for employees.

PDTs are used inside PF-4 to assist personnel with monitoring pressure zones and controlling fan operation and ventilation. The replacement project took place from November 2019 to January 2021. The newly installed PDTs are also a commercially available product, so PF-4 workers have spares on hand, whereas the older models required design changes upon failure, causing inconsistency in equipment at the facility. The replacement of all 22 units has already led to less frustration for employees and significant cost and timesaving benefits throughout the facility.

COMMUNITY RELATIONS

$2.5 Million Triad Grant Benefits Students, Businesses, and Communities in Northern New Mexico

Students, small businesses, and other community members and groups in northern New Mexico will benefit this year from a $2.5 million grant from Triad National Security, LLC, the Laboratory's operator. The Triad board of directors approved the regional investment to fund education, economic development, and community giving.

"This grant underlines Triad's commitment to supporting northern New Mexico as we go through this challenging time and look to build a brighter future," said Laboratory Director Thom Mason. "The board's decision will also magnify the impact of Laboratory programs and our employees' generous support of nonprofits."

Triad is a public service-oriented organization equally owned by its three founding members: Battelle Memorial Institute, the Texas A&M University System, and the University of California.

From the $2.5 million, three key long-term partners will receive major investments:

- The LANL Foundation receives $700,000 for STEM education, scholarships, and teacher support.
- Regional Development Corporation receives $700,000 to support economic diversity, including an internship program and awards to small businesses.
- United Way of Northern New Mexico receives $150,000 to support nonprofit collaboration and capacity building, as well as to tackle issues associated with substance abuse.

The remainder of the funding will support other nonprofits and programs in the region, in addition to administering the grant.

ASM Engages in Community and Supplier Outreach to Prepare for Digital Procurement Transformation

Acquisition Services Management (ASM) has presented to numerous community groups and suppliers to prepare its launch of new digital procurement systems, Ariba and Fieldglass. Going forward, all suppliers must adopt to these new systems, as such adoption is part of ASM's transformation initiative.

To show its commitment and support to suppliers, including small and local businesses as they adapt to these changes, the Laboratory implemented outreach efforts to inform and engage suppliers proactively. These regional and national presentations have reached out to hundreds (if not thousands) of suppliers and stakeholders, including the following:

- LANL Subcontractor Forum (Oct. 8)
- Taos Resource Partners Community Huddle (Oct. 26)
- Santa Fe Hispanic Chamber of Commerce Board of Directors (Oct. 29)
- New Mexico's Procurement Technical Assistance Center (Nov. 10)
- Santa Fe Chamber Chat (Nov. 12)
- LANL Subcontractor Forum (Nov. 12)
- American Indian Chamber of Commerce NM and tribal businesses (Nov. 19)
- LANL Community Conversations Event and Ariba breakout session (Dec. 15)
- LANL Subcontractor Forum (Dec. 17)
- LANL Subcontractor Forum (Jan. 21)
- Albuquerque Hispano Chamber of Commerce (Feb. 4)

Capital Projects Paves the Way for Student Interns to become Full-Time Employees

Five students studying Construction Management or Project Management at local universities are gaining valuable experience — and a foot in the door at LANL — thanks to internships with the Project Controls group in the Associate Laboratory Directorate for Capital Projects (ALDCP).

In addition to the five current students, a former student intern in Project Controls recently converted to a full-time position immediately upon graduating with her Bachelor's Degree in Construction Management from the University of New Mexico (UNM).

Last February, ALDCP leadership reached out to the Business Schools at UNM and Northern New Mexico College — both of which have Bachelor Degree programs in Project Management — to promote LANL internship programs to their students. Ideally, these schools will be joined by other universities and colleges, collectively creating a pipeline for students to gain experience in construction-related fields while they are still in school. In turn, LANL hopes to convert as many students as possible to full-time employees as soon as they graduate. The five students who are currently in the program plan to stay at LANL after they graduate.

These local student-recruiting efforts are possible through the support of the Capital Projects and Weapons Directorates leadership teams, both of which help fund the program as a direct part of their annual budget.

Laboratory Spent $413 Million with New Mexico Small Businesses in FY20

New numbers for FY20 demonstrate the Laboratory's big beneficial impact on New Mexico's economy, as the Laboratory employed 12,367 people for a total of $1.24 billion in salaries and contracted with small businesses statewide for $413 million.

"Los Alamos National Laboratory is a major economic driver in the region, and we are committed to strengthening local companies and growing the local workforce," said Thom Mason, Laboratory Director. "Perhaps the most admirable gain in FY20 [consisted of] our contracts with New Mexico small businesses, which were up 43 percent. I am confident we will build on these efforts in 2021."

In FY20, which ended September 30, 2020, the Laboratory spent $413 million in procurement contracts with New Mexico small businesses. Of those, many are categorized as disadvantaged, women-owned, veteran owned and HUB-zone located.

With 57 percent of Laboratory employees living outside Los Alamos County, much of their salaries — a collective $608.7 million — is spent in their home communities.

Laboratory Signs Lease to Establish Santa Fe Office

The Laboratory recently opened a new downtown office space, thus strengthening connections between LANL and the City of Santa Fe. This space can house as many as 75 employees and includes a new meeting place known as the Dorothy McKibbin Conference Center. A Laboratory news release provides details about the Santa Fe space.

The Laboratory signed a 10-year lease on this 28,000-square-foot building at the junction of N. Guadalupe and W. Alameda. The new location offers space for Laboratory meetings, events, conferences, and teleworking opportunities.

"Santa Fe has played an important role in the history of the Laboratory since our inception, and we're delighted to have a presence in the City Different again," said Thom Mason, Laboratory Director. "This building will act as an additional entrance point for the Laboratory, just as Dorothy McKibbin's office at 109 East Palace in Santa Fe did decades ago. I extend my gratitude to the National Nuclear Security Administration for partnering with the Laboratory to make this project happen."

The Santa Fe office includes the first-floor Dorothy McKibbin Conference Center, in addition to permanent offices and co-working spaces for the Laboratory's Community Partnerships Office, as well as some communications and government affairs functions. No hazardous work will be carried out at this new space. The up-to-75 employees who plan to work in this new office space are residents of Santa Fe, Rio Arriba, Bernalillo, Los Alamos, and Sandoval Counties.

Students Awarded Career Pathways Scholarships

The LANL Foundation awarded Career Pathway Scholarships to 22 northern New Mexico students pursuing two-year degree, certificates or careers in trades. Recipients in this spring 2021 award cycle are pursuing studies in high-demand fields, such as nursing, information technology, radiation technology and welding.

Supported by donations from Laboratory employees in conjunction with a grant from Laboratory operator Triad National Security, LLC, Career Pathway Scholarships

consist of $750/semester for up to four semesters, depending on student individual need. Some students are enrolled full time, whereas others attend part time while working and caring for their families. Recipients can be entering higher education for the first time or are in the process of making a career change.

A full list of Spring 2021 Career Pathways recipients is available on the LANL Foundation website.

SELECTED MEDIA COVERAGE

New "Fast Forward" Algorithm Could Unleash the Power of Quantum Computers
Brinkwire—Alanis Hayal (1/26)
"Quantum computers have a limited time to perform calculations before their useful quantum nature, which we call coherence, breaks down," said Andrew Sornborger of the Computer, Computational, and Statistical Sciences division at Los Alamos National Laboratory, and senior author on a paper announcing the research. "With a new algorithm we have developed and tested, we will be able to fast forward quantum simulations to solve problems that were previously out of reach."

Forests with Diverse Tree Sizes and Small Clearings Hinder Wildland Fire Growth
Science Daily (1/27)
A new 3D analysis shows that wildland fires flare up in forests populated by similar-sized trees or checkerboarded by large clearings and slow down where trees are more varied. The research can help fire managers better understand the physics and dynamics of fire to improve fire-behavior forecasts.

Why Science Fairs Matter in America
ShareAmerica—Lenore T. Adkins (1/28)
Science fairs help students apply what they've learned in STEM subjects in an innovative way. The students start with their own curiosity and, in some cases, figure out how to tackle pressing problems in society, said Harshini Mukundan, who has spent two decades judging middle and high school science fairs at the local and regional levels.

New Mexico Officials Adjusting to Year-Round Wildfire Seasons
Santa Fe New Mexican—Scott Wyland (1/31)
As wildfires threaten to grow in frequency and severity, Los Alamos National Laboratory researchers are devising new computer models to better predict how fires might ignite and spread, based on weather, landscape, debris buildup and even how similar in size the trees are.

Frontiers in Science Talk will Address Coexisting with COVID-19: Disease Forecasting and Science with LANL's Nick Hengartner and Guests
Los Alamos Reporter (2/1)
On Wednesday, Feb. 24, the Los Alamos National Laboratory Fellows invite the community to the front lines of the battle against COVID-19 in "Coexisting with COVID-19 and the role of science," the latest installment of the now-virtual Frontiers in Science series.

Management of New Mexico's National Labs Receive High Marks in Performance Evaluation
Albuquerque Business First—Colin Krabbe (2/3)
Sandia National Laboratories and Los Alamos National Laboratory received positive reviews from the National Nuclear Security Administration as part of their yearly performance reviews, resulting in multi-million dollar boosts for each.

More Than a Quarter of Age 75+ New Mexicans Vaccinated
Albuquerque Journal—Colleen Heild (2/3)
Scrase, who is Cabinet secretary of the state Human Services Department, said the decision to reopen schools came in part because of the results of computer modeling at Los Alamos National Laboratories in December.

Space Detective Talks Powerful Tools of Her Trade February 8 — Science on Tap
Los Alamos Reporter—Maire O'Neill (2/3)
How did the Mars Odyssey orbiter identify the elements present on Mars? How do scientists understand not only what planet's environment is like now, but also what it was in the ancient past? The answer: By detecting gamma rays.

LANL: Laboratory Spent $413 Million with New Mexico Small Businesses in FY 2020
Los Alamos Reporter (2/4)
New numbers for fiscal year 2020 show Los Alamos National Laboratory's big impact on New Mexico's economy, as the Laboratory employed 12,367 people for a total of $1.24 billion in salaries and contracted with small businesses statewide for $413 million.

Celebrate the Mars Perseverance Landing with the Bradbury Science Museum Feb. 18
Los Alamos Reporter (2/5)
NASA's Perseverance rover will touch down on the surface of Mars the afternoon of Thursday, Feb. 18. Celebrate the landing and learn more about Los Alamos National Laboratory's role in the mission at a virtual after-party scheduled for that evening at 6 p.m.

Einsteinium is Mysterious. Scientists Have Unlocked Some of its Secrets

New York Times (2/7)

David L. Clark, a scientist at the Los Alamos National Laboratory who was not involved with the research, said the end result was a "tour de force" and part of a renaissance in the study of these heavy elements … and could be used in novel nuclear reactors or cancer therapies.

LANL Models Show Vaccine No Magic Bullet

Albuquerque Journal (2/7)

At Los Alamos National Laboratory, we're using mathematical models and computational simulations enabled by the laboratory's supercomputing capabilities to understand how best to distribute the COVID-19 vaccine.

The Best Books About Mars, by the Mars Explorers Themselves

Air & Space Magazine—Tony Reichhardt (2/8)

Here are some notable books by those fortunate few who've already, in a sense, become Martians. To quote one of them, Sarah Stewart Johnson, "We've built an entire field of science around something we can barely see in the night." Roger Wiens of the Los Alamos National Laboratory learned this difficult business on the 2001 Genesis mission to capture samples of the solar wind, then had an instrument accepted for Curiosity, called ChemCam, to study the chemistry of Mars rocks.

DTRA Supports Global Health Efforts through Modeling and Simulation

Defense Visual Information Distribution Service—Darnell Gardner (2/8)

DTRA leveraged a newly formed partnership with Los Alamos National Lab (LANL) to upgrade their systems for greater detailed reports. The EpiGrid, a DTRA-funded M&S tool, received enhancements by LANL to deliver a more powerful compartmental modeling system. This enabled DTRA to provide quick-turn products for OCONUS epidemiological modeling.

Los Alamos Medal Winners Recognized for Revolutionary Contributions

LA Daily Post—Carol Clark (2/9)

Los Alamos National Laboratory (LANL) announced today that two scientists have been awarded the Los Alamos Medal, the Laboratory's highest honor, for revolutionary scientific contributions to national security and science. Fred Mortensen and Bette Korber are recognized for their distinguished achievements that have enhanced the success of the Laboratory. (Story also appears in the Los Alamos Reporter.)

LANL Plans to Open Office in Downtown Santa Fe

Albuquerque Journal—T.S. Last (2/10)

Los Alamos National Laboratory announced Wednesday it will open an office in Santa Fe big enough to house 75 employees with space to hold meetings, events and conferences.

Microphones on NASA's Rover will Record Audible Sounds on Mars

NPR—Joe Palca (2/11)

Nina Lanza is a geologist at Los Alamos National Laboratory. SuperCam has a laser that shoots at rocks, revealing their chemical composition.

LANL: New Virtual Platform Shows Students the Science Behind Everyday Objects

Los Alamos Reporter (2/11)

See the Science targets upper elementary and middle-school students—the age at which students, particularly girls, get intimidated—or inspired—by classes in science, technology, engineering, and math. Materials will also emphasize the scientific contributions of women.

LANL Spends Big in Santa Fe

Santa Fe New Mexican—Teya Vitu (2/12)

Los Alamos National Laboratory reported this week it spent a record $413 million in procurement contracts with small businesses across New Mexico in the 2020 fiscal year, which ended Sept. 30. This was a 43 percent increase from the $289 million spent at New Mexico small businesses in 2019 and more spending is expected this year, lab Director Thom Mason said.

This Ragtag Crew is Shaking Up the World of Earthquake Prediction

Wired—Robin Andrews (2/12)

Paul Johnson, a geophysicist at Los Alamos National Laboratory in New Mexico and lead author of the new study, thought that machine learning may be able to help with earthquake prediction.

Editorial: LANL in Santa Fe? A Boost in Economic Arm

Santa Fe New Mexican—Editorial Staff (2/15)

Los Alamos National Laboratory will be renting space in downtown Santa Fe — the first time in 58 years the laboratory will have a physical presence here. . . These are dollars Santa Fe desperately needs right about now. Welcome, Los Alamos National Laboratory employees. We're glad to have you.

Latest Mars Mission Gets Help from New Mexico
Santa Fe New Mexican—Dillon Mullan (2/16)
When NASA's latest expedition to the Red Planet culminates some time Thursday with the touchdown of the Perseverance rover, Santa Fe-based geologist Larry Crumpler will be mapping terrain and collecting samples with technology developed in part at Los Alamos National Laboratory.

Los Alamos National Laboratory Staff Recognized for Outstanding Response to Pandemic and More
Los Alamos Reporter—Editorial Staff (2/17)
Los Alamos National Laboratory employees were recently recognized with Honor and Achievement Awards from the Department of Energy Secretary; 248 Laboratory employees on eight teams won the awards, which are the highest honor a DOE employee or contractor can receive.

New Mexico Scientists Wait for Mars Rover Landing
KRQE—KRQE Staff (2/17)
New Mexico scientists are preparing for the landing of the Mars rover. Roger Wiens who works at Los Alamos National Laboratory says he is waiting for the Perseverance Rover to send a photo back to them that it has landed safely.

Two Mutated Coronaviruses Have Merged into One Hybrid Virus. Here's How That Happened
Salon—Matthew Rozsa (2/18)
The findings were first publicly announced earlier this month at a meeting organized by the New York Academy of Sciences by Dr. Bette Korber of the Los Alamos National Laboratory.

Perseverance Rover Landing Virtual 'After-Party' a Big Hit
Los Alamos Reporter—Marie O'Neill (2/19)
Los Alamos National Laboratory hosted a virtual after-party Thursday evening for more than 300 people to mark the successful landing of the Perseverance rover in the Jezero Crater on Mars just hours earlier, watched by millions of people around the world.

Los Alamos Researchers Offer COVID-19 Presentation Online for General Public
Las Cruces Sun-News—Algernon D'Ammassa (2/22)
A trio of researchers from Los Alamos National Laboratory will offer a live online presentation about COVID-19 data modeling, vaccination and immunity Wednesday evening designed for the general public.

Los Alamos National Lab Scientists Help Inform Public Policy
KRQE— Gabriel Burkhart (2/23)
Throughout the pandemic, some of the scientists on the frontlines of the battle against COVID-19 are here in New Mexico at Los Alamos National Lab. KRQE News 13 spoke with one of the lab's senior scientists about how their data helps inform public policy.

The Sounds of Mars: NASA's Perseverance Rover will put Ears on the Red Planet for the 1st Time
Space.com—Mike Wall (2/24)
"Having a sound of another planet is another way that we can start to realize that it feels familiar" Nina Lanza, team lead for space and planetary exploration at the U.S. Department of Energy's Los Alamos National Laboratory in New Mexico, told Space.com.